

## **AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions and listings of claims in this application.

1. (currently amended) An organic position sensitive detector comprising:  
a first electrode, wherein the first electrode is resistive and has a first point and a second point;  
a first contact in electrical contact with the first point on the first electrode;  
a second contact in electrical contact with the second point on the first electrode;  
a second electrode disposed near the first electrode;  
a donor semiconductive organic layer disposed between the first electrode and the second electrode; and  
an acceptor semiconductive organic layer disposed between the first electrode and the second electrode and adjacent to the donor semiconductive organic layer,  
wherein a hetero-junction is located between the donor layer and the acceptor layer,  
and at least one of the donor layer and the acceptor layer is light absorbing; and wherein the detector further comprises at least one of  
a third contact, located at a third point on the resistive electrode; and  
a third electrode, wherein the third electrode is resistive and has a first point and a second point; a third contact in electrical contact with the first point on the third electrode; and a fourth contact in electrical contact with the second point on the third electrode, and wherein the third electrode is disposed near the first electrode.
2. (original) The detector of claim 1, wherein the first electrode is an anode.
3. (original) The detector of claim 1, wherein the first electrode is a cathode.
4. (original) The detector of claim 1, wherein the first point and the second point are at opposite ends of the first electrode.
5. (canceled)
6. (original) The detector of claim 5 1, further comprising a fourth contact, wherein the fourth contact is located at a fourth point on the resistive electrode

7. (original) The detector of claim 1, wherein the resistive electrode is 0.5-10 cm long and 0.01-5.0 cm wide.
8. (original) The detector of claim 1, wherein the light absorbing layer has spectral sensitivity in the visible spectrum.
9. (original) The detector of claim 1, wherein the resistive electrode has a resistivity of  $5\Omega/\text{square}$ - $10\text{ K}\Omega/\text{square}$ .
10. (original) The detector of claim 1, wherein the donor semiconductive organic layer comprises copper phthalocyanine (CuPc).
11. (original) The detector of claim 1, wherein the acceptor semiconductive organic layer comprises 3,4,9,10-perylenetetracarboxylic bis-benzimidazole (PTCBI).
12. (original) The detector of claim 1, further comprising an exciton blocking layer between the first electrode and the second electrode and adjacent to either the first electrode or the second electrode.
13. (original) The detector of claim 12, wherein the exciton blocking layer comprises bathocuproine (BCP).
14. (original) The detector of claim 13, wherein the BCP is doped with 3,4,9,10-perylenetetracarboxylic bis-benzimidazole (PTCBI).
15. (original) The detector of claim 1, further comprising a polymer layer between the first electrode and the second electrode and adjacent to either the first electrode or the second electrode.
16. (original) The detector of claim 14, wherein the polymer layer comprises 3,4-polyethylenedioxythiophene:polystyrenesulfonate (PEDOT:PSS).

17. (original) The detector of claim 16, wherein:  
the donor semiconductive organic layer comprises copper phthalocyanine (CuPc);  
the acceptor semiconductive organic layer comprises  
3,4,9,10-perylenetetracarboxylic-bis-benzimidazole (PTCBI);  
the exciton blocking layer comprises 2,9-dimethyl-4,7-diphenyl-1,10-phenanthroline (BCP); and  
the polymer layer comprises 3,4-polyethylenedioxythiophene:polystyrenesulfonate (PEDOT:PSS).
18. (original) The detector of claim 1, wherein the detector has an optical beam spatial resolution of less than 50  $\mu\text{m}$ .
19. (original) The detector of claim 18, wherein the detector has an optical beam spatial resolution of less than 20  $\mu\text{m}$ .
20. (canceled)
21. (currently amended) An organic position sensitive detector comprising:  
a first electrode, wherein the first electrode is resistive and has a first point and a second point;  
a first contact in electrical contact with the first point on the first electrode;  
a second contact in electrical contact with the second point on the first electrode;  
a third contact, located at a third point on the resistive electrode;  
a second electrode disposed near the first electrode; and  
a semiconductive organic layer disposed between the first electrode and the second electrode, wherein the organic layer comprises at least one light absorbing material and wherein the detector is configured and adapted for measuring a lateral photovoltage.
22. (original) The detector of claim 21, wherein the semiconductive organic layer comprises a donor layer and an acceptor layer and has a hetero-junction between the donor layer and the acceptor layer.
23. (original) The detector of claim 21, wherein the first electrode is an anode.

24. (original) The detector of claim 21, wherein the first electrode is a cathode.
25. (canceled)
26. (currently amended) The detector of claim ~~25~~ 21, further comprising a fourth contact, wherein the fourth contact is located at a fourth point on the resistive electrode.
27. (original) The detector of claim 21, wherein the resistive electrode has a resistance of 100Ω-1000Ω.
28. (original) The detector of claim 21, wherein the donor semiconductive organic layer comprises copper phthalocyanine (CuPc).
29. (original) The detector of claim 21, wherein the acceptor semiconductive organic layer comprises 3,4,9,10-perylenetetracarboxylic bis-benzimidazole (PTCBI).
30. (original) The detector of claim 21, further comprising an exciton blocking layer between the first electrode and the second electrode and adjacent to either the first electrode or the second electrode.
31. (original) The detector of claim 30, wherein the exciton blocking layer comprises bathocuproine (BCP).
32. (original) The detector of claim 31, wherein the BCP is doped with 3,4,9,10-perylenetetracarboxylic bis-benzimidazole (PTCBI).
33. (original) The detector of claim 21, further comprising a polymer layer between the first electrode and the second electrode and adjacent to either the first electrode or the second electrode.
34. (original) The detector of claim 33, wherein the polymer layer comprises 3,4-polyethylenedioxythiophene:polystyrenesulfonate (PEDOT:PSS).

35. (previously presented) A method of determining the position of incident radiation comprising:
- obtaining an organic position sensitive detector (PSD), wherein the PSD comprises:
    - a first electrode, wherein the first electrode is resistive and has a first point and a second point;
    - a first contact in electrical contact with the first point on the first electrode;
    - a second contact in electrical contact with the second point on the first electrode;
    - a second electrode disposed near the first electrode; and
    - a semiconductive organic layer disposed between the first electrode and the second electrode, wherein the organic layer comprises at least one light absorbing material,
  - placing the PSD in the path of the incident radiation; and
  - measuring a first current at the first contact and a second current at the second contact; and
- wherein the currents are used to determine determining the position of the incident radiation on the PSD from the measurement of the first and second currents.
36. (original) The method of claim 35, wherein there is no voltage applied to the PSD.
37. (original) The method of claim 35, further comprising applying a voltage of between 0.0 and -2.0 volts.
38. (original) The method of claim 35, wherein the semiconductive organic layer comprises a donor layer and an acceptor layer and has a hetero-junction between the donor layer and the acceptor layer.
39. (original) The method of claim 35, further comprising measuring a current at a third contact and a current at a fourth contact, wherein the third contact and fourth contact are located on the resistive electrode.
40. (original) The method of claim 35, wherein the detector response is substantially linear above 10  $\mu$ W incident power.
41. (original) The method of claim 35, wherein the beam tracking velocity is at least 1.0 m/s.